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LE, DUY K	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/868,024	Applicant(s) STAACK ET AL.	
	Examiner Duy K Le	Art Unit 2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to amendment filed on May 19, 2004.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 97/17623 to Vukovich et al. in view of Singer et al. (U.S. Patent 5,485,163).

As to claim 1, the Vukovich reference discloses a method for estimating the location of a mobile unit in a cellular radio system ("the present invention provides a multi-layer tracking system utilizing the mobile telephone to provide an initial approximate location (Layer 1), a more precise location by forcing the telephone to gather and report additional information (Layer 2)" (page 1, lines 23-26)), said system comprising elongate cells and non elongate cells ("base stations may be co-located with other base stations or operated separately. When individually sited, the antenna system is usually (although not necessarily) designed to transmit and receive signals in an omni-directional pattern. When two or more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations" (page 2, lines 23-29). As interpreted by examiner, non-elongate cells have individually sited base stations and sectorized cells are elongate cells), and said method comprising:

identifying a cell of the system in which the mobile unit is located ("by determining the Base Station Identity Code it is possible to uniquely identify the operating base station" (page 2, lines 29-31));

determining the location of the base station ("by determining the Base Station Identity Code it is possible to uniquely identify the operating base station" (page 2, lines 29-31). "The above listed management data related to each of the base stations may be used together with information related to the physical location and antenna characteristics of those base stations" (page 3, lines 3-6));

if the cell is elongate, estimating the distance of the mobile unit from the base station of the cell, determining bearing information associated with the cell, the bearing information defining a direction ("when two or more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations. Thereby, by determining the Base Station Identity Code it is possible to uniquely identify the operating base station with knowledge of the antenna characteristics of that base station to determine an approximate azimuth direction from the base station to the mobile telephone) (page 2, line 26 to page 3, line 2)), and estimating the location of the mobile unit by calculating a location offset from the base station by the said distance in the said direction ("cell identity and Timing Advance (TA) information is accessed directly from the mobile telephone. Cell identity information provides the means of accessing a database containing the location and characteristics of the cell's transmission antenna and thereby a reference point and arc centered on that point, within which

the mobile telephone is located. Timing Advance information provides a good estimate of the distance from the base station to the mobile telephone" (page 6, lines 5-11)).

However, the Vukovich reference does not disclose determining whether the cell is elongate or non-elongate, and if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell. The Singer reference teaches determining whether the cell is elongate or non elongate ("in networks having sufficiently small nodes, such as microcellular networks, the location of PLU 4 may be determined with sufficient precision solely based upon it location within the coverage area 16 of one such node 20. In larger cells having sector antennas, the approximate location of PLU 4 may be determined based on the coverage area 18 of the receiving sector transceiver; Figure 1" (Col. 2, lines 57-63). As interpreted by examiner, microcellular networks are non-elongated cells; the coverage area 18 is a sectorized cell and functionally equivalent to an elongated cell), and if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell ("in networks having sufficiently small nodes, such as microcellular networks, the location of PLU 4 may be determined with sufficient precision solely based upon it location within the coverage area 16 of one such node 20. In larger cells having sector antennas, the approximate location of PLU 4 may be determined based on the coverage area 18 of the receiving sector transceiver; Figure 1" (Col. 2, lines 57-63). As interpreted by examiner, microcellular networks are non-elongated cells, and thus estimating the location of the mobile unit is based on the location of the base station ("node 20")).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Vukovich to comprise determining whether the

cell is elongate or non elongate, and if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell, as taught by Singer, in order to provide an approximate location without needing additional steps or data.

As to claim 2, Vukovich-Singer discloses a method as claimed in claim 1, wherein the bearing information is independent of the location of the mobile unit within the cell ("a second embodiment of the invention provides enhanced accuracy by using the Timing Advance data. This data effectively provides the range from the mobile telephone to the base station. Addition of this information to the triangulation calculation further improves the accuracy of the position fix" (Vukovich, page 3, lines 10-14). As interpreted by examiner, the Timing Advance data is the bearing information).

As to claim 3, Vukovich-Singer discloses a method as claimed in claim 1, wherein the distance of the mobile unit from the base station is estimated by means of synchronization information of the cellular radio system ("a second embodiment of the invention provides enhanced accuracy by using the Timing Advance data. This data effectively provides the range from the mobile telephone to the base station" (Vukovich, page 3, lines 10-12). As interpreted by examiner, the Timing Advance data provide synchronization information).

As to claim 4, Vukovich-Singer discloses a method as claimed in claim 3, wherein the synchronization information represents a timing offset between the mobile unit and the base station ("a second embodiment of the invention provides enhanced accuracy by using the Timing Advance data. This data effectively provides the range from the mobile telephone to the base station" (Vukovich, page 3, lines 10-12). "A third embodiment of the invention involves controlling the mobile telephone so as to transfer the call through one or more of the other base

stations that are within range. In this way the Timing Advance data for each of the base stations is obtained" (page 3, lines 15-18). As interpreted by examiner, in the GSM system, the Timing Advance data provide to-and-from transmission time measurements, and thus the timing offset, between the mobile station and the base station).

As to claim 8, the Vukovich reference discloses a locating unit for estimating the location of a mobile unit in a cellular radio system, the unit being connected to the cellular radio system for reception of information identifying a cell of the system in which the mobile unit is located and information indicative of the distance of the mobile unit from the base station of the cell ("the present invention provides a multi-layer tracking system utilizing the mobile telephone to provide an initial approximate location (Layer 1), a more precise location by forcing the telephone to gather and report additional information (Layer 2)" (page 1, lines 23-26)), said system comprising elongate and non-elongate cells ("base stations may be co-located with other base stations or operated separately. When individually sited, the antenna system is usually (although not necessarily) designed to transmit and receive signals in an omni-directional pattern. When two or more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations" (page 2, lines 23-29). As interpreted by examiner, non-elongate cells have individually sited base stations and sectorized cells are elongate cells), said locating unit comprising:

data storage means storing the location of the base station and, if the cell is elongate, bearing information associated with the cell, the bearing information defining a direction ("the system uses management data generated or stored within a GSM digital mobile telephone to

enable the location of the telephone to be determined by triangulation" (Abstract, lines 1-2). "When two or more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations. Thereby, by determining the Base Station Identity Code it is possible to uniquely identify the operating base station with knowledge of the antenna characteristics of that base station to determine an approximate azimuth direction from the base station to the mobile telephone) (page 2, line 26 to page 3, line 2)); and

location calculation means for if the said cell is elongate, calculating the distance of the mobile unit from the base station of the cell and calculating a location offset from the base station by the said distance in the said direction as an estimate of the location of the mobile unit ("cell identity and Timing Advance (TA) information is accessed directly from the mobile telephone. Cell identity information provides the means of accessing a database containing the location and characteristics of the cell's transmission antenna and thereby a reference point and arc centered on that point, within which the mobile telephone is located. Timing Advance information provides a good estimate of the distance from the base station to the mobile telephone" (page 6, lines 5-11). "A third embodiment of the invention involves controlling the mobile telephone so as to transfer the call through one or more of the other base stations that are within range. In this way the Timing Advance data for each of the base stations is obtained. Adding this data to the triangulation calculations further enhances the accuracy of the position fix" (page 3, lines 15-19)).

However, the Vukavich reference does not disclose location calculation means for if the said cell is non-elongate, calculating the location of the base station as an estimate of the location

the mobile unit. The Singer reference teaches location calculation means for if the cell is non-elongate, calculating the location of the base station as an estimate of the location of the mobile unit ("in networks having sufficiently small nodes, such as microcellular networks, the location of PLU 4 may be determined with sufficient precision solely based upon it location within the coverage area 16 of one such node 20. In larger cells having sector antennas, the approximate location of PLU 4 may be determined based on the coverage area 18 of the receiving sector transceiver; Figure 1" (Col. 2, lines 57-63). As interpreted by examiner, for non-elongated cells (microcells), estimating the location of the mobile unit is based on the location of the base station).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the unit of Vukovich to comprise location calculation means for if the cell is non-elongate, calculating the location of the base station as an estimate of the location of the mobile unit, as taught by Singer, in order to provide an approximate location without needing additional steps or data.

4. Claims 5-6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 97/17623 to Vukovich et al. in view of Singer et al. (U.S. Patent 5,485,163) and further in view of Boltz et al. (WO 98/00988).

As to claim 5, Vukovich-Singer discloses a method as claimed in claim 1. However, it does not disclose the step of sending a message to the mobile unit in dependence on the estimated location. The Boltz reference discloses "position information regarding a mobile station is determined and provided upon request. In one situation, mobile station position is

determined in response to a request from another mobile subscriber (10, 40) and displayed (226) on the requesting mobile station display" (Abstract, lines 1-2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Vukovich-Singer to comprise the step of sending a message to the mobile unit in dependence on the estimated location, as taught by Boltz, in order to convey mobile station position information to requesting entities.

As to claim 6, Vukovich-Singer discloses a method as claimed in claim 1. However, it does not disclose the step of receiving a message from the mobile unit requesting estimation of its location. The Boltz reference discloses "in a first embodiment, the system responds to a position request from another mobile station by routing the request to the serving switching node, processing location information to determine a mobile station position, and routing a return message identifying the determined position to the requesting mobile station" (page 5, lines 22-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Vukovich-Singer to comprise the step of receiving a message from the mobile unit requesting estimation of its location, as taught by Boltz, in order to convey mobile station position information to requesting entities.

As to claim 9, Vukovich-Singer discloses a locating unit as claimed in claim 8. However, it does not disclose messaging means for generating a message in dependence on the estimated location for transmission to the mobile unit. The Boltz reference discloses "in a first embodiment, the system responds to a position request from another mobile station by routing the request to the serving switching node, processing location information to determine a mobile

station position, and routing a return message identifying the determined position to the requesting mobile station" (page 5, lines 22-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the unit of Vukovich-Singer to comprise messaging means for generating a message in dependence on the estimated location for transmission to the mobile unit, as taught by Boltz, in order to convey mobile station position information to requesting entities.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 97/17623 to Vukovich et al. in view of Singer et al. (U.S. Patent 5,485,163) and further in view of Maloney et al. (WO 98/29758).

As to claim 7, Vukovich-Singer discloses a method as claimed in claim 1. However, it does not disclose the steps of receiving information defining location, and calculating a route between that location and the estimated location of the mobile station. The Maloney reference teaches the steps of receiving information defining location, and calculating a route between that location and the estimated location of the mobile station ("in rural areas, it is contemplated that correlating the TDOA information with collateral information in the form of topological map-matching (i.e., matching of location information to the known geographic locations of roads or other features of the landscape) would be enough in most instances to monitor traffic flow along main roads as well as to facilitate the dispatch of emergency vehicles and roadside assistance. Rural areas have relatively few roads such that the intersection of one with a TDOA locus for the two sensor stations and the mobile radio transceiver would be sufficient to uniquely identify the probable position of the mobile radio transceiver" (page 14, lines 10-18)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Vukovich-Singer to comprise the steps of receiving information defining location, and calculating a route between that location and the estimated location of the mobile station, as taught by Maloney, in order to enhance the accuracy of location determination.

6. Claims 10-12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 97/17623 to Vukovich et al. in view of Maloney et al. (WO 98/29758) and further in view of Singer et al. (U.S. Patent 5,485,163).

As to claim 10, the Vukovich reference discloses a locating unit for reporting the location of a mobile unit in a cellular radio system, the unit being connected to the cellular radio system for reception of information identifying a cell of the system in which the mobile unit is located and information indicative of the distance of the mobile unit from the base station of the cell ("the present invention provides a multi-layer tracking system utilizing the mobile telephone to provide an initial approximate location (Layer 1), a more precise location by forcing the telephone to gather and report additional information (Layer 2)" (page 1, lines 23-26). "By determining the Base Station Identity Code it is possible to uniquely identify the operating base station" (page 2, lines 29-31). "A second embodiment of the invention provides enhanced accuracy by using the Timing Advance data. This data effectively provides the range from the mobile telephone to the base station" (page 3, lines 10-12)), said system comprising elongate cells and non elongate cells ("base stations may be co-located with other base stations or operated separately. When individually sited, the antenna system is usually (although not necessarily) designed to transmit and receive signals in an omni-directional pattern. When two or

more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations" (page 2, lines 23-29). As interpreted by examiner, non-elongate cells have individually sited base stations and sectorized cells are elongate cells), the locating unit comprising:

data storage means storing the distance of a mobile unit from the base station of the cell ("the system uses management data generated or stored within a GSM digital mobile telephone to enable the location of the telephone to be determined by triangulation" (Abstract, lines 1-2). "A second embodiment of the invention provides enhanced accuracy by using the Timing Advance data. This data effectively provides the range from the mobile telephone to the base station" (page 3, lines 10-12)), and if the cell is elongate bearing information associated with the cell, the bearing information defining a direction ("when two or more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations. Thereby, by determining the Base Station Identity Code it is possible to uniquely identify the operating base station with knowledge of the antenna characteristics of that base station to determine an approximate azimuth direction from the base station to the mobile telephone) (page 2, line 26 to page 3, line 2)); and

location reporting means for generating a report on the location of the mobile unit ("in one embodiment of the invention, the above listed management data related to each of the base stations may be used together with information related to the physical location and antenna characteristics of those base stations to determine the position of the mobile telephone by

triangulation from the several base stations. The degrees of redundancy of the information will provide a sufficiently accurate position definition for many applications" (page 3, lines 3-9)).

However, the Vukovich reference does not disclose the use of descriptive information to determine the location of the mobile unit, and if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell. The Maloney reference teaches the use of descriptive information ("collateral information") to determine the location of the mobile unit ("in rural areas, it is contemplated that correlating the TDOA information with collateral information in the form of topological map-matching (i.e., matching of location information to the known geographic locations of roads or other features of the landscape) would be enough in most instances to monitor traffic flow along main roads as well as to facilitate the dispatch of emergency vehicles and roadside assistance. Rural areas have relatively few roads such that the intersection of one with a TDOA locus for the two sensor stations and the mobile radio transceiver would be sufficient to uniquely identify the probable position of the mobile radio transceiver" (page 14, lines 10-18)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the unit of Vukovich to use descriptive information ("collateral information") in combination with the distance information to determine the location of the mobile unit, as taught by Maloney, in order to enhance the accuracy of location determination.

However, Vukovich-Maloney does not disclose if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell. The Singer reference teaches if the cell is non-elongate, estimating the location of the mobile unit to be the location of

the base station of the cell ("in networks having sufficiently small nodes, such as microcellular networks, the location of PLU 4 may be determined with sufficient precision solely based upon it location within the coverage area 16 of one such node 20. In larger cells having sector antennas, the approximate location of PLU 4 may be determined based on the coverage area 18 of the receiving sector transceiver; Figure 1" (Col. 2, lines 57-63). As interpreted by examiner, microcellular networks are non-elongated cells, and thus estimating the location of the mobile unit is based on the location of the base station ("node 20")).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the unit of Vukovich-Maloney wherein if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell, as taught by Singer, in order to provide an approximate location without needing additional steps or data.

As to claim 11, Vukovich-Maloney-Singer discloses a unit as claimed in claim 10. The Maloney reference further discloses the descriptive information comprises place name information ("the descriptive information received through the wireless communication system can include positional knowledge such as voice expression of the fact that the transmission is from a vehicle on a roadway or the name of the road on which the mobile transceiver is traveling" (page 15, lines 8-11)).

As to claim 12, Vukovich-Maloney-Singer discloses a unit as claimed in claim 10. The Maloney reference further discloses the descriptive information comprises road name information ("the descriptive information received through the wireless communication system can include positional knowledge such as voice expression of the fact that the transmission is

from a vehicle on a roadway or the name of the road on which the mobile transceiver is traveling" (page 15, lines 8-11)).

As to claim 16, the Vukovich reference discloses locating apparatus for reporting the location of a mobile unit in a mobile telecommunication system including positioning means for determining the geographic location of a mobile unit in response to a request including information identifying that mobile unit ("the present invention provides a multi-layer tracking system utilizing the mobile telephone to provide an initial approximate location (Layer 1), a more precise location by forcing the telephone to gather and report additional information (Layer 2)" (page 1, lines 23-26). "By determining the Base Station Identity Code it is possible to uniquely identify the operating base station" (page 2, lines 29-31). "A second embodiment of the invention provides enhanced accuracy by using the Timing Advance data. This data effectively provides the range from the mobile telephone to the base station" (page 3, lines 10-12). "The data received is correlated with known information about each base station in order to perform the triangulation calculations and to present the location information on a map display" (page 3, line 31 to page 4, line 2)), said system comprising elongate cells and non elongate cells ("base stations may be co-located with other base stations or operated separately. When individually sited, the antenna system is usually (although not necessarily) designed to transmit and receive signals in an omni-directional pattern. When two or more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations" (page 2, lines 23-29). As interpreted by examiner, non-elongate cells have individually sited base stations and sectorized cells are elongate cells), and if the cell is elongate bearing information associated

with the cell, the bearing information defining a direction ("when two or more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations. Thereby, by determining the Base Station Identity Code it is possible to uniquely identify the operating base station with knowledge of the antenna characteristics of that base station to determine an approximate azimuth direction from the base station to the mobile telephone) (page 2, line 26 to page 3, line 2)). However, it does not disclose the locating apparatus comprising:

location request means for requesting the geographic location of a mobile station from the positioning means, and if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell;

geographic location translation means for receiving the geographic location of the mobile unit from the positioning means and translating the said geographic location into descriptive information; and

location response means for generating a response message comprising the said descriptive information.

The Maloney reference teaches the location request means, the geographic location translation means, and the location response means as cited (see page 15, lines 1-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Vukovich to have the locating apparatus comprising location request means for requesting the geographic location of a mobile station from the positioning means; geographic location translation means for receiving the geographic location of the mobile unit from the positioning means and translating the said geographic

location into descriptive information; and location response means for generating a response message comprising the said descriptive information. One would have been motivated to make such a modification in view of the suggestion in Maloney to correlate a positional location into geographical form to enhance the accuracy of the location determination.

However, Vukovich-Maloney does not disclose if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell. The Singer reference teaches if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell ("in networks having sufficiently small nodes, such as microcellular networks, the location of PLU 4 may be determined with sufficient precision solely based upon it location within the coverage area 16 of one such node 20. In larger cells having sector antennas, the approximate location of PLU 4 may be determined based on the coverage area 18 of the receiving sector transceiver; Figure 1" (Col. 2, lines 57-63). As interpreted by examiner, microcellular networks are non-elongated cells, and thus estimating the location of the mobile unit is based on the location of the base station ("node 20")).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Vukovich-Maloney wherein if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell, as taught by Singer, in order to provide an approximate location without needing additional steps or data.

7. Claims 13 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 97/17623 to Vukovich et al. in view of Maloney et al. (WO 98/29758) in view of Singer et al. (U.S. Patent 5,485,163) and further in view of Kingdon et al. (U.S. Patent 6,088,594).

As to claim 13, Vukovich-Maloney-Singer discloses a unit as claimed in claim 10. However, it does not disclose the location reporting means comprises wireless application protocol server. The Kingdon reference teachess the location reporting means comprises wireless application protocol server ("the mobile subscriber can initiate positioning of the MS200 by activating a terminal-based browser 305 (step 400), e.g., a Wireless Application Protocol (WAP) "deck", within the MS 200, which can then connect to a web-base location application 330 (step 405), e.g., a Wireless Marked Language (WML) Location Application (LA)" (Col. 4, lines 25-31). "The MPC 270 then presents the geographical position, e.g., latitude and longitude, of the MS 200 to the web-based location application 330 which requested the positioning (step 490). The web-based location application 330 takes this geographical position, converts the information into the desired format (step 492), and send the location information in the desired format" (Col. 5, lines 38-45)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the unit of Vukovich-Maloney-Singer wherein the location reporting means comprises wireless application protocol server, as taught by Kingdon, in order to provide a graphical presentation of the current location of the mobile station.

As to claim 17, Vukovich-Maloney-Singer discloses locating apparatus as claimed in claim 16. However, it does not disclose the locating apparatus is capable of providing a content service to respond with the descriptive information. The Kingdon reference teaches the locating apparatus is capable of providing a content service to respond with the descriptive information ("the mobile subscriber can select the format of the returned location information (step 410), e.g., street address, location on a map, or other type of format" (Col. 4, lines 47-49). "The MPC 270

then presents the geographical position, e.g., latitude and longitude, of the MS 200 to the web-based location application 330 which requested the positioning (step 490). The web-based location application 330 takes this geographical position, converts the information into the desired format (step 492), and send the location information in the desired format to the terminal-based browser 305 with the MS 200 (step 494), which is then displayed to the mobile subscriber on the display 308 of the MS 200 (step 496)" (Col. 5, lines 38-48)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Vukovich-Maloney-Singer wherein the locating apparatus is capable of providing a content service to respond with the descriptive information, as taught by Kingdon, in order to provide a current location of the mobile station in a desired format.

As to claim 18, Vukovich-Maloney-Singer-Kingdon discloses locating apparatus as claimed in claim 17. The Kingdon reference further discloses the service is a wireless application protocol service ("the mobile subscriber can initiate positioning of the MS200 by activating a terminal-based browser 305 (step 400), e.g., a Wireless Application Protocol (WAP) "deck", within the MS 200, which can then connect to a web-base location application 330 (step 405), e.g., a Wireless Marked Language (WML) Location Application (LA)" (Col. 4, lines 25-31)).

As to claim 19, Vukovich-Maloney-Singer discloses locating apparatus as claimed in claim 16. However, it does not disclose the positioning mean is a mobile location center. The Kingdon reference discloses "the TA value acquired from the target BTS 230 (TA3), together with other TA values (TA1 and TA2) are forwarded to the Mobile Positioning Center (MPC) 270

from the MSC 260 (step 480), where the location of the MS 200 is determined using the triangulation algorithm (step 485)" (Col. 5, lines 34-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Vukovich-Maloney-Singer wherein the positioning mean is a mobile location center, as taught by Kingdon, in order to determine the current location of the mobile station.

8. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 97/17623 to Vukovich et al. in view of Maloney et al. (WO 98/29758) in view of Singer et al. (U.S. Patent 5,485,163) in view of Kingdon et al. (U.S. Patent 6,088,594) and further in view of Boltz et al. (WO 98/00988).

As to claim 14, Vukovich-Maloney-Singer-Kingdon discloses a unit as claimed in claim 13. However, it does not disclose the location reporting means comprises means for accepting a request for information on the location of the said mobile unit from a second mobile unit. The Boltz reference teaches the location reporting means comprises means for accepting a request for information on the location of the said mobile unit from a second mobile unit ("position information regarding a mobile station is determined and provided upon request. In one situation, mobile station position is determined in response to a request from another mobile subscriber (10, 40) and displayed (226) on the requesting mobile station display" (Abstract, lines 1-2)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the unit of Vukovich-Maloney-Singer-Kingdon wherein the location reporting means comprises means for accepting a request for information on the location

of the said mobile unit from a second mobile unit, as taught by Boltz, in order to convey mobile station position information to requesting entities.

As to claim 15, Vukovich-Maloney-Singer-Kingdon-Boltz discloses a unit as claimed in claim 14. The Kingdon reference further discloses the request is made by means of the wireless application protocol ("the mobile subscriber can initiate positioning of the MS200 by activating a terminal-based browser 305 (step 400), e.g., a Wireless Application Protocol (WAP) "deck", within the MS 200, which can then connect to a web-base location application 330 (step 405), e.g., a Wireless Marked Language (WML) Location Application (LA)" (Col. 4, lines 25-31)).

9. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 98/00988 to Boltz et al. in view of Kingdon et al. (U.S. Patent 6,088,594) in view of Vukovich et al. (WO 97/17623) and further in view of Singer et al. (U.S. Patent 5,485,163).

As to claim 20, the Boltz reference discloses a method for providing a report on the location of a first mobile station, the method comprising: a second mobile station transmitting a request for information on the location of the first mobile station; estimating the location of the first mobile station; generating a report on the location of the first mobile station; and transmitting that report to the second mobile station ("in a first embodiment, the system responds to a position request from another mobile station by routing the request to the serving switching node, processing location information to determine a mobile station position, and routing a return message identifying the determined position to the requesting mobile station" (page 5, lines 22-27)).

However, it does not disclose that the request and/or the report are transmitted by means of the wireless application protocol, said system comprising elongate and non-elongate cells, if

the cell is non-elongate, estimating the location of the first mobile station to be the location of the base station of the cell, and if the cell is elongate, estimating the distance of the mobile unit from the base station of the cell, determining bearing information associated with the cell, the bearing information defining a direction, and estimating the location of the mobile unit by calculating a location offset from the base station by the said distance in the said direction. The Kingdon reference teaches the request and/or the report are transmitted by means of the wireless application protocol ("the mobile subscriber can initiate positioning of the MS200 by activating a terminal-based browser 305 (step 400), e.g., a Wireless Application Protocol (WAP) "deck", within the MS 200, which can then connect to a web-based location application 330 (step 405), e.g., a Wireless Marked Language (WML) Location Application (LA)" (Col. 4, lines 25-31)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Boltz wherein the request and/or the report are transmitted by means of the wireless application protocol, as taught by Kingdon, in order to provide a graphical presentation of the current location of the mobile station.

However, Boltz-Kingdon does not disclose said system comprising elongate and non-elongate cells, if the cell is non-elongate, estimating the location of the first mobile station to be the location of the base station of the cell, and if the cell is elongate, estimating the distance of the mobile unit from the base station of the cell, determining bearing information associated with the cell, the bearing information defining a direction, and estimating the location of the mobile unit by calculating a location offset from the base station by the said distance in the said direction.

The Vukovich reference teaches said system comprising elongate cells and non elongate cells ("base stations may be co-located with other base stations or operated separately. When individually sited, the antenna system is usually (although not necessarily) designed to transmit and receive signals in an omni-directional pattern. When two or more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations" (page 2, lines 23-29). As interpreted by examiner, non-elongate cells have individually sited base stations and sectorized cells are elongate cells), if the cell is elongate, estimating the distance of the mobile unit from the base station of the cell, determining bearing information associated with the cell, the bearing information defining a direction ("when two or more base stations are co-located the antenna system is designed to have directional properties so that each base station services mobile telephones in a sector that is different from the other co-located base stations. Thereby, by determining the Base Station Identity Code it is possible to uniquely identify the operating base station with knowledge of the antenna characteristics of that base station to determine an approximate azimuth direction from the base station to the mobile telephone) (page 2, line 26 to page 3, line 2)), and estimating the location of the mobile unit by calculating a location offset from the base station by the said distance in the said direction ("cell identity and Timing Advance (TA) information is accessed directly from the mobile telephone. Cell identity information provides the means of accessing a database containing the location and characteristics of the cell's transmission antenna and thereby a reference point and arc centered on that point, within which the mobile telephone is located. Timing Advance information

provides a good estimate of the distance from the base station to the mobile telephone" (page 6, lines 5-11)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Boltz-Kingdon, for the system comprising elongate cells and non elongate cells, to comprise if the cell is elongate, estimating the distance of the mobile unit from the base station of the cell, determining bearing information associated with the cell, the bearing information defining a direction, and estimating the location of the mobile unit by calculating a location offset from the base station by the said distance in the said direction, as taught by Vukovich, in order to locate an individual carrying the mobile unit.

However, Boltz-Kingdon-Vukovich does not disclose if the cell is non-elongate, estimating the location of the first mobile station to be the location of the base station of the cell. The Singer reference teaches if the cell is non-elongate, estimating the location of the first mobile station to be the location of the base station of the cell ("in networks having sufficiently small nodes, such as microcellular networks, the location of PLU 4 may be determined with sufficient precision solely based upon it location within the coverage area 16 of one such node 20. In larger cells having sector antennas, the approximate location of PLU 4 may be determined based on the coverage area 18 of the receiving sector transceiver; Figure 1" (Col. 2, lines 57-63). As interpreted by examiner, microcellular networks are non-elongated cells, and thus estimating the location of the mobile unit is based on the location of the base station ("node 20")).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Boltz-Kingdon-Vukovich to comprise if the cell is non-elongate, estimating the location of the first mobile station to be the location of the base

station of the cell, as taught by Singer, in order to provide an approximate location without needing additional steps or data.

As to claim 21, Boltz-Kingdon-Vukovich-Singer discloses a method as claimed in claim 20. The Kingdon reference further discloses the report is generated by a wireless application protocol server ("the MPC 270 then presents the geographical position, e.g., latitude and longitude, of the MS 200 to the web-based location application 330 which requested the positioning (step 490). The web-based location application 330 takes this geographical position, converts the information into the desired format (step 492), and send the location information in the desired format to the terminal-based browser 305 with the MS 200 (step 494), which is then displayed to the mobile subscriber on the display 308 of the MS 200 (step 496)" (Col. 5, lines 38-48)).

As to claim 22, Boltz-Kingdon-Vukovich-Singer discloses a method as claimed in claim 20. The Kingdon reference further discloses the request is made to a gateway mobile location center by way of a WTA server ("the mobile subscriber can initiate positioning of the MS200 by activating a terminal-based browser 305 (step 400), e.g., a Wireless Application Protocol (WAP) "deck", within the MS 200, which can then connect to a web-based location application 330 (step 405), e.g., a Wireless Marked Language (WML) Location Application (LA)" (Col. 4, lines 25-31). "The web-based location application 330 sends a positioning request to a Mobile Positioning Center (MPC) 270 (step 415)" (Col. 4, lines 54-56)).

As to claim 23, Boltz-Kingdon-Vukovich-Singer discloses a method as claimed in claim 20. The Kingdon reference further discloses the report is generated based on information from a gateway mobile location center and from a location information server ("the TA value acquired

from the target BTS 230 (TA3), together with other TA values (TA1 and TA2) are forwarded to the Mobile Positioning Center (MPC) 270 from the MSC 260 (step 480), where the location of the MS 200 is determined using the triangulation algorithm (step 485). The MPC 270 then presents the geographical position, e.g., latitude and longitude, of the MS 200 to the web-based location application 330 which requested the positioning (step 490)" (Col. 5, lines 34-42). As interpreted by examiner, the MPC comprises a gate mobile location center and a location information server).

Response to Arguments

10. Applicant's arguments filed May 19, 2004 have been fully considered but they are not persuasive.

With respect to independent claim 1, the applicants argued that Singer does not determine whether the cell is elongate or non-elongate and if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell. As cited in the Office action, examiner interpreted sectorized cells are elongate cells (as shown in Figure 1 of the application). The Singer reference teaches determining whether the cell is elongate or non-elongate ("in networks having sufficiently small nodes, such as microcellular networks, the location of PLU 4 may be determined with sufficient precision solely based upon it location within the coverage area 16 of one such node 20. In larger cells having sector antennas, the approximate location of PLU 4 may be determined based on the coverage area 18 of the receiving sector transceiver; Figure 1" (Col. 2, lines 57-63). As interpreted by examiner, microcellular networks are non-elongated cells; the coverage area 18 is a sectorized cell and

functionally equivalent to an elongated cell. So based on the cell type, different location techniques are used); and if the cell is non-elongate, estimating the location of the mobile unit to be the location of the base station of the cell ("in networks having sufficiently small nodes, such as microcellular networks, the location of PLU 4 may be determined with sufficient precision solely based upon it location within the coverage area 16 of one such node 20. In larger cells having sector antennas, the approximate location of PLU 4 may be determined based on the coverage area 18 of the receiving sector transceiver; Figure 1" (Col. 2, lines 57-63). As interpreted by examiner, microcellular networks are non-elongated cells, and thus estimating the location of the mobile unit is based on the location of the base station ("node 20")).

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy K Le whose telephone number is 703-305-5660. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Duy Le
August 6, 2004

EDWARD F. URBAN
SUPERVISORY PATENT E...
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